

**UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF VIRGINIA  
NORFOLK DIVISION**

<b>LEVEL 3 COMMUNICATIONS, LLC,</b>	)	
	)	
<b>Plaintiff,</b>	)	
	)	
<b>v.</b>	)	<b>Case No. 2:07cv589 RDG FBS</b>
	)	
<b>LIMELIGHT NETWORKS, INC.,</b>	)	
	)	
<b>Defendant.</b>	)	

**MEMORANDUM OF LAW IN SUPPORT  
OF LEVEL 3'S PROPOSED CLAIM CONSTRUCTIONS**

Plaintiff Level 3 Communications, LLC ("Level 3"), by and through its undersigned counsel, respectfully submits the following memorandum of law in support of its proposed claim constructions.<sup>1,2</sup>

**I. INTRODUCTION**

This is a case alleging patent infringement by Limelight of three patents owned by Level 3 - U.S. Patent Nos. 7,054,935; 6,654,807; and 6,473,405 ("the Level 3 Patents"). The technology in this case pertains to the delivery of content over the Internet, such as text, pictures, video and music found on websites located on the World Wide Web, without which the modern Internet could not function effectively.

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<sup>1</sup> Level 3 has set forth constructions for the terms it believes the Court needs to address. Level 3 reserves the right to address any terms raised by Limelight's claim construction brief that are not discussed herein.

<sup>2</sup> For the Court's convenience, claim charts have been attached as Exhibit A that restate Level 3's claim constructions from this Brief.

### **A. Content Delivery Technology**

Content delivery technology is the fundamental technology that allows people connected to the Internet to view websites, listen to and purchase music, watch videos (from video clips to entire television shows and movies), look at pictures and obtain software and software updates for their computers and video game consoles. Companies such as Level 3 and Limelight operate content delivery networks, known as CDNs, which implement such technology. CDNs are made up of numerous computers (called servers) that are deployed in a widely-dispersed fashion across the Internet and that deliver content on behalf of multiple content providers. This is what the Level 3 Patents cover. By contrast, content delivery technology prior to the '935 and '807 Patents involved the use of either only one "origin site" (or server) or numerous "mirror" sites, which were computers that stored and delivered content for a single content provider such as CNN, ESPN and Yahoo.

The Level 3 Patents cover many basic aspects for successfully implementing a content delivery network, including the basic architecture and methodology of a content delivery network and a method for improving the routing of content over the Internet.

### **B. The Legal Standard for Claim Construction**

The law requires that the Court give the claim language at issue the meaning that the words would have to one of ordinary skill in the art, using the entire patent (and file history, if relevant) as context, but understanding the distinctive roles of the specification and claims and, thus, studiously avoiding "importing limitations from the specification into the claim." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (*en banc*). To avoid the improper narrowing of claim scope by over-use of the specification, "the court's focus [must] remain [] on understanding how a person of ordinary skill in the art would understand the claim terms." *Id.*

*Phillips* sets forth the basic rules for claim construction in patent cases:

- "The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation." *Id.* at 1313.
- The intrinsic evidence (*i.e.*, the specification and the prosecution history) of the patent is useful in determining the meaning of the words in patent claims. *Id.* at 1314-15.
- Limitations from the specification should not be imported into the claims. *Id.* at 1323.
- Claims are not limited to the preferred embodiment disclosed in the specification. *Id.*
- The prosecution history may inform the meaning of the words in patent claims. *Id.* at 1314-15.
- Extrinsic evidence, such as dictionaries, may not be used to contradict the meaning of the claim terms as evidenced by the specification and file history. *Id.* at 1317-19.

Level 3's proposed claim constructions keep the focus where *Phillips* requires it to be kept – on the words of the claims themselves. *See Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 805 (Fed. Cir. 2007) (“When construing claims, a court must begin by ‘look[ing] to the words of the claims themselves . . . to define the scope of the patented invention.’”) (citing *Phillips*, 415 F.3d at 1314). Limelight's proposed claim constructions, on the other hand, seek to divert attention from the meaning of the claim language itself and asks the Court improperly to import limitations from the embodiments described in the specification. Limelight's attempts in this regard are expressly forbidden by *Phillips*.

## **II. CLAIM CONSTRUCTION OF THE PATENTS-IN-SUIT**

Level 3 will address the claim terms which it believes to be legitimately at issue in the following order of patent groups: the content delivery network architecture patents and the routing patent.

### **A. Content Delivery Network Architecture U.S. Patent Nos. 7,054,935 and 6,654,807 (the "Footprint Patents")**

#### **1. Background**

In order to view a web page when surfing the Internet, a computer user can type in a URL

(Uniform Resource Locator) of a website that the user desires to view. For example, a user who wants to visit Yahoo's web page can type the URL "http://www.yahoo.com" into the computer's web browser. The browser program (*e.g.*, Microsoft Internet Explorer, Firefox, Netscape Navigator) on the user's computer requests the Yahoo web page. Upon receipt of that request, a Yahoo computer returns the Yahoo web page to the requester's computer. The web page includes instructions on how the browser should display the page to the user.

The instructions include identification of objects/content (*e.g.*, pictures, images, videos, etc) that are needed to assemble the Yahoo web page. The instructions include a URL such as <http://www.yahoo.com/object>, which can be used by the browser to obtain the object. There can be many objects and, thus, this process can be repeated numerous times until the web page is completely assembled. Generally, the process of assembling a web page is transparent to the computer user as it occurs very quickly. Additionally, web pages can have links (including corresponding URLs) which a computer user can click or select to obtain a specific object/content associated with the link.

Between 1995 to 1998, there were two trends that were placing increased stress on the Internet infrastructure – an increasing number of users and the increased size of requested content. These trends resulted in enormous increases in the amount of traffic on the Internet, and consequently, poor user experience (slow downloading of websites/content and website crashes). ('935 Patent, col. 1:25-26, 32-34).<sup>3</sup> Given the technical limitations of the Internet at the time (without the inventions of the Footprint Patents), if too many people wanted information from one website at the same time, the server "crashed" and the content would not be delivered. To

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<sup>3</sup> Level 3 notes that the specification of the '807 Patent is identical to the specification of the '935 Patent and, thus, only citation to the '935 Patent is provided when discussing the specification of the Footprint Patents in Section II(A).

address these problems, a content provider (*e.g.*, ESPN, CNN or Yahoo) could (1) purchase additional bandwidth from Internet service providers (ISP) such as AT&T and MCI, whether in the form of larger or additional "pipes" (conduits through which content could flow) ('935 Patent, col. 1:35-43) or (2) replicate its computers at different geographic locations, creating "mirrors" of the computers' content. ('935 Patent, col. 1:44-53). These solutions had considerable drawbacks.

Mirrors were expensive to deploy and operate, and introduced new technical complexities to websites. ('935 Patent, col. 1:49-50). Thus, this solution was impractical and incomplete. Mirrors would store the entire content library of a single content provider and deliver the content of only that provider. This was inefficient because a considerable amount of computer storage space was being dedicated to store content that would seldom, if ever, be requested by a computer user. Moreover, since mirrors were not shared by content providers (*i.e.*, were not servers which could contain content from more than one content provider), the expense for such systems had to be borne by each content provider. As such, only large content providers could afford such a solution to deliver their content. ('935 Patent, col. 1:49-53).

## **2. The Footprint Patents**

The inventors of the Footprint Patents pioneered a more efficient way to deliver content by providing a network for delivering content to Internet users on behalf of multiple content providers. The framework for this innovative technology has since been coined a content delivery network (CDN) and the Footprint Patents cover fundamental aspects concerning the architecture and methodology of CDNs.

More specifically, a CDN is a network having, among other things, a collection of computers, known as repeater servers, which deliver content on behalf of multiple content providers (*i.e.*, subscribers to the CDN service). ('935 Patent, Figure 1; col. 4:23-31, 38-46; col. 5:42-45). CDNs are owned and operated by companies other than the content providers. So, for

example, content providers (or subscribers to a CDN) such as ESPN, CNN, and Yahoo will pay CDNs to deliver their content. A concept called "rendezvous" is used to cause requests for content to be sent to a CDN rather than to the content provider's computer (server). ('935 Patent, col. 7:34 – col. 10:22).

The CDN returns the actual IP address<sup>4</sup> (which is the Internet's equivalent of a street address) associated with one or more repeater servers that can serve requested content to a requester's computer. ('935 Patent, col. 7:13-23; col. 10:25-26). Using the IP address of a repeater server in the CDN, the requester's computer can directly contact that repeater server to request the content. ('935 Patent, col. 10:26-29). If the repeater server already has a copy of the content, it will simply deliver the content to the requester's computer. ('935 Patent, col. 10:48-50; col. 11:3-6). Otherwise, it will obtain the content from an origin server or another repeater server (its peer) and then deliver the content to the requester's computer. In either case, the content is only delivered if it is that of a subscriber to the CDN service. ('935 Patent, col. 10:62 – col. 11:6). Because the CDN is being shared amongst multiple subscribers, the CDN also maintains records concerning the delivery of content for each subscriber. ('935 Patent, col. 19:43 – col. 20:23).

### **3. The Claims of the Footprint Patents**

The claims of the '935 and '807 Patents recite particular methods for delivering content, as well as features making up a content delivery network. Independent claims 1 and 10 of the '935 Patent claim as an invention the overall system or network including various components thereof. Independent claims 7, 9 and 18 of the '935 Patent and claims 1, 8, 9, 11, 12, 19, 21, 22

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<sup>4</sup> Every computer or server with access to the Internet has a unique IP address – which normally consists of a group of four number sets separated by periods -- and that address is how computers and servers are located on the Internet.

and 25 of the '807 Patent recite a method for delivering content using a computer network or system. Further, independent claims 26 and 27 of the '807 Patent recite a repeater server and its functions. The dependent claims of the Footprint Patents claim additional features of the system/network and the method for delivering content.

Defendants appear to be disputing the meaning of a number of terms that are found repeatedly in the asserted claims of the Footprint Patents. We address the parties' major points of contention (the terms in dispute and their proposed claim construction appear in bold below).

#### 4. **Construction of the Claims of the Footprint Patents**

##### a. **Origin Server**

Level 3 asserts the term "origin server" should be construed as follows: **a server containing subscriber resources, which can be distributed to one or more repeater servers.**

The specification of the Footprint Patents specifically confirms Level 3's definition of origin server: "[o]rigin server 102 is a server at which resources originate," "[e]ach repeater . . . replicates some or all of the information available on the origin server 102 . . . ," and "[i]f the repeater obtained the resource from the origin server, the repeater then caches the resource locally." ('935 Patent, col. 4:28-29, 49; col. 10:59-61).

The parties generally agree on the definition of the term origin server except that Limelight has added the requirement that an origin server must be a device to which "a client first makes a request for a particular resource." Limelight's definition is refuted by the two most important pieces of intrinsic evidence – the patent specification and the claim language itself.

Limelight's proposed construction is in conflict with the specification, which describes a process by which web browsers/clients request resources directly from a repeater server (defined below) and not from an origin server. ('935 Patent, col. 16: 40-57). Even further, the

specification refers to this process as an “optimization” and explicitly outlines inefficiencies associated with directing all resource requests initially to an origin server. (‘935 Patent, col. 16: 51-54). Limelight's definition excludes an embodiment from the claims in direct conflict with well-established Federal Circuit case law. *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) (“We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification.”); *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed.Cir.2007) (“[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.”) (internal quotation marks omitted).

In addition, the claims of the Footprint Patents support Level 3's proposed construction. For example, claim 11 of the '935 Patent provides that "when the information is determined not to be stored locally, attempt to obtain the information [] from an origin server of the plurality of origin servers . . . ." ('935 Patent, col. 27:18-21), and claims 3 and 14 of the '807 Patent, respectively, provide that "when the requested information is determined not to be cached locally, obtain[] the requested information [] from an origin server of the subscriber . . . ." and "if the requested information is cached locally, retriev[e] the requested information from a cache, otherwise obtain[] the requested information from the at least one origin server . . . ." ('807 Patent, col. 26:64-66; col. 29:42-47). Notably, there is nothing in the language of these claims tying the origin server to a device that initially receives a client request and, therefore, Limelight's proposed construction does not conform to the scope recited in the claims themselves.

#### **b. Repeater Server**

Level 3 asserts the term "repeater server " should be construed as follows: **a server which may receive resources from one or more origin servers and which is used to service**



**resource requests.**

The specification of the Footprint Patents discloses that repeater servers receive content or resources: "[e]ach repeater 104a, 104b, and 104c replicates some or all of the information available on the origin server 102 . . . ." and "[a] repeater may include a repeater cache 110, used to avoid unnecessary transactions with the origin server 102." ('935 Patent, col. 4:28-31; col. 5:31-33; *see also* col. 10:62-11:6) (Exhibit F, Clark Decl. ¶ 13). Moreover, repeaters serve requests: "[r]epeaters 104a, 104b, etc. are intermediate processors used to service client requests . . . ." ('935 Patent, col. 5:26-28).

The parties generally agree on the definition of the term repeater server except that Limelight has added that requests must be directed to the repeater server "by a repeater selector mechanism." The intrinsic evidence does not support Limelight's definition. The Court need look no further than the claims of the '807 Patent themselves. Whereas the term "repeater selector mechanism" was used in most claims of the '807 Patent, the patentees consciously excluded the term "repeater selector mechanism" from independent claims 26 and 27 (and the claims dependent thereon). Limelight's definition has the practical effect of reading "repeater selector mechanism" into claims of the '807 Patent which specifically omitted that term. Limelight's definition also has the practical effect of reading "repeater selector mechanism" from the specification ('935 Patent, col. 11:17-22) into claims of the '935 Patent which do not use the term in any claim. Such a reading is incorrect. *Phillips*, 415 F.3d at 1323; *see also Chamberlain Group Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008) (warning that it is "unacceptable to import limitations into a claim from the written description"); *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1325 (Fed. Cir. 2003) ("The danger of improperly importing a limitation is even greater when the purported limitation is based upon a term not appearing in the

claim.”).

**c. Repeater Server Network**

Level 3 asserts the term "repeater server network" should be construed as follows:

**a network including repeater servers.**

The specification of the Footprint Patents discloses a repeater server network as a collection of repeater servers. In particular, Figure 1 of the Footprint Patents shows a network of repeater servers – Repeater A 104a, Repeater B 104b, and Repeater C 104c. ('935 Patent, Figure 1; col. 4:46-47). Level 3's proposed definition is also confirmed by the prosecution history in which a content delivery network (CDN) is identified as a network of repeater servers. (Exhibit B, Amendment Under 37 CFR §1.116 dated October 17, 2005, p. 8).

The parties generally agree on the definition of the term repeater server network except that Limelight has added the limitation that the repeater servers must be "connected to a master repeater." The use of a master repeater is only one embodiment and inclusion of this limitation directly contradicts the language in the specification which states "*[p]referably . . . each repeater maintains a connection with a special repeater known as its master repeater . . .*" ('935 Patent, col. 4:33-37) (emphasis added). Use of a master repeater in a repeater server network is **not** mandatory, contrary to the implication of Limelight's definition. Moreover, Limelight is reading limitations from the specification into the claims in violation of *Phillips*.

**d. Subscriber**

Level 3 asserts the term "subscriber" should be construed as follows: **an entity that publishes resources via one or more origin servers.**

Level 3's definition is supported by the two most important pieces of intrinsic evidence – an express definition in the patent specification and the claim language itself. The specification

of the Footprint Patents specifically confirms Level 3's proposed definition of subscriber: "A subscriber is an entity (e.g., a company) that publishes resources (e.g., files) via one or more origin servers." ('935 Patent, col. 10:37-39). The construction of the term "subscriber" is also confirmed by the wording of the claims themselves: "subscribers being entities that publish resources to the repeater server network via one or more origin servers" and "the subscriber is an entity that publishes resources via at least one of the one or more origin servers." ('935 Patent, col. 25:58-60; col. 26:21-23).

The parties generally agree on the definition of the term subscriber except that Limelight has added that the subscriber must be "authorized to have requests for such resources directed to the repeater server network." Neither the specification nor the claims define a subscriber in terms of whether the subscriber is "authorized." In fact, the use of the word "authorize" or "authorized" is only used once in the specification in relation to a requester/web browser (*i.e.*, computer user's computer), not a subscriber, being authorized to access a resource at an origin server: "[e]ach new request for the resource must be tested at the origin server to assure that the *requester is authorized* to access the resource." ('935 Patent, col. 23:65-67) (emphasis added).

e. **Name**

Level 3 asserts the term "name" should be construed as follows: **an identifier.**

The specification of the Footprint Patents discloses that a name is merely an identifier: "[i]n an HTTP GET request to a repeater, the pathname part of the URL includes the name of the origin server on behalf of which the request is being made . . . ." ('935 Patent, col. 22:62-65). Level 3's proposed definition is also confirmed by the prosecution history which states that "the claimed invention deals with whether or not a name used to request the information corresponds to that of a known subscriber." (Exhibit B, Amendment Under 37 CFR §1.116 dated October 17, 2005, p.

11).

The parties generally agree on the definition of the term name except that Limelight has added the limitation that the name must be "uniquely assigned to the selected repeater server." Such language is found nowhere in the intrinsic evidence and, moreover, is inconsistent with the preferred embodiment. As such, Limelight's proposed claim construction is directly in conflict with well-settled Federal Circuit guidelines for claim construction. *See Helmsderfer v. Bobrick Washroom Equip., Inc.*, No. No. 2008-1027, 2008 WL 2262435, at \*3 (Fed. Cir. June 4, 2008) ("Our case law generally counsels against interpreting a claim term in a way that excludes the preferred embodiment from the scope of the invention."); *Oatey*, 514 F.3d at 1276; *MBO Labs.*, 474 F.3d at 1333.

In fact, Limelight's definition completely ignores how the Internet works and, more importantly, ignores the specification and prosecution history. The specification states that a set of candidate repeaters can be identified using a given domain name. ('935 Patent, col. 22:29). As such, a single name can be associated with multiple repeaters and is certainly not uniquely assigned to only one repeater server. (Exhibit F, Clark Decl. ¶ 15). Moreover, the prosecution history identified "a1952.g.akamai.net" as a name. At that time, "a1952.g.akamai.net" was associated with one or more repeaters and not uniquely assigned to a single repeater. (Exhibit B, Amendment Under 37 CFR §1.116 dated October 17, 2005, p. 8) (Exhibit F, Clark Decl. ¶ 14).

f. **Wherein the request for the resource is rejected**  
**Causing the request to be rejected**  
**Reject(ing) the client request**  
**Rejecting the request**

Level 3 asserts the phrases "wherein the request for the resource is rejected," "causing the request to be rejected," "reject(ing) the client request" and "rejecting the request" should be construed as follows: **refusing to return a requested resource to a client.**

The specification of the Footprint Patents discloses that an end user or client requesting content of a non-subscriber will not be served by the repeater network: "[t]he repeater uses an internal table to verify that the origin server belongs to a known 'subscriber' . . . . When the entity subscribes, it is permitted to utilize the repeater network." ('935 Patent, col. 10:36-41). In other words, a resource will be returned if the requested resource is that of a subscriber and, logically, the converse applies – a resource will not be returned if the requested resource is not for a subscriber (*i.e.*, the resource is rejected). ('935 Patent, col. 10:44-45; Figure 5). One exemplary method of rejecting a request is to "return[] a reply indicating that the requested resource does not exist." ('935 Patent, col. 10:45-47). The fact that this is an exemplary method is confirmed by the prosecution history, which described returning a reply as "[o]ne implementation" of rejection. (Exhibit B, Amendment Under 37 CFR §1.116 dated October 17, 2005, p. 10). Those skilled in the art understand that there are numerous other methods of rejection. (Exhibit F, Clark Decl. ¶ 16).

The parties mainly diverge on Limelight's addition of the limitation that the rejection occurs "when it is determined that the client request is for a resource that is not from a subscriber, based on the origin server identified in the client-request URL."<sup>5</sup> Limelight pulls the "based on the origin server identified in the client-request[ed] URL" language from dependent claim 4 of the '935 Patent. ('935 Patent, col. 26:12-16). Incorporating the language from a dependent claim into the independent claim flies in the face of basic patent law principals – the independent claims must necessarily be broader than the claims dependent therefrom. *Baldwin Graphic Sys. Inc. v. Sieber, Inc.*, 512 F.3d 1338, 1345 (Fed. Cir. Jan. 15, 2008) (holding that

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<sup>5</sup> It should be noted that there is no language in the portion of the specification discussing rejection (step C2) ('935 Patent, col. 10:36-47) that states that the rejection is based on an origin server identified in "the client-request URL."

importing limitation found in dependent claim into independent claim is "contrary to basic claim construction principles"); *Bell Atlantic Network Servs. Inc. v. Covad Commc'ns Group Inc.*, 262 F.3d 1258, 1274 (Fed. Cir, 2001) ("It is true that limitations stated in dependent claims are normally not to be read into the independent claim from which they depend."); *SRI Int'l v. Matsushita Elec. Corp. of America*, 775 F.2d 1107, 1122 (Fed. Cir. 1985) ("It is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement.").

**g. Appropriate Repeater Server**

Level 3 asserts the term "appropriate repeater server" should be construed as follows: **one or more repeater servers which are not too heavily loaded or which are selected by some measure of network cost.**

The specification of the Footprint Patents specifically confirms Level 3's definition of an appropriate repeater server: "[a]n appropriate repeater is one which is not too heavily loaded and which is not too far from the client in terms of some measure of network distance." ('935 Patent, col. 11:22-24). The fact that an appropriate repeater server can be selected based on load "or" a measure of network cost, such as distance (location), is supported by the specification which provides that these two factors are merely examples to consider. Notably, after discussing load and network distance, the specification goes on to state that: "[o]ther, dynamic solutions can also be used to select an appropriate repeater." ('935 Patent, col. 11:26-27).

Furthermore, the claims themselves support Level 3's position that an appropriate repeater server can be selected based on load "or" a measure of network cost, such as distance (location). Claims 36, 37 and 41 of the '807 Patent each provide a different factor used to select a repeater server. In particular, these claims provide that a repeater selector mechanism identifies the repeater server "based, at least in part, *on the load* on at least some of the repeater

servers" (claim 36); "based, at least in part, *on a location* on the network of a client sending the client request" (claim 37); and "based, at least in part, *on a relative cost* of transmitting requested information between the repeater server and a client sending the client request" (claim 41) (emphasis added). As such, considering more than one factor in selecting the appropriate repeater server is optional because various dependent claims provide for the consideration of a number of different factors. Requiring that all of these selection factors be considered part of the independent claim would violate the doctrine of claim differentiation. *Phillips*, 415 F.3d at 1315 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.").

#### **h. Resource**

Level 3 asserts the term "resource" should be construed as follows: **one or more data files such as text, images, video, audio and the like.**

The specification of the Footprint Patents discloses that a resource can be any type of content provided over the Internet. Specifically, the specification states that "URLs specify the location of resources (information, data files, etc.) on the network" and, further, discusses that "a document consists of data (text, images, sounds and the like) . . . ." ('935 Patent, col. 5:55-56; col. 6:2-4; *see also* col. 1:32-34; col. 5:5-10).

The parties generally agree on the definition of the term resource except that Limelight has added that a resource is "not a link that requires further action." This is Limelight's most blatant attempt to read a limitation into the claims that is *nowhere* in the intrinsic evidence. Limelight's proposed construction is illogical and inconsistent with the commonly understood meaning of resource. A link is not a resource itself but, rather, is associated with a resource. (Exhibit F, Clark Decl. ¶ 17). The specification specifically discloses resources being associated

with links: "[i]n HTML, a document consists of data . . . ***including links*** to other sections of the same document or to other documents." ('935 Patent, col. 6:2-4) (emphasis added). By their nature, links require further action to obtain a resource (*e.g.*, picture, video, music). ('935 Patent, col. 5:58-65).

i. **Client request for a resource**  
**Request from a client for a resource**  
**Client request**

Level 3 asserts the terms "client request for a resource," "request from a client for a resource," and "client request" should be construed as follows: **message from a client requesting a resource, which is located in a computer network such as the Internet**. This is the plain and ordinary meaning of the terms. (Exhibit F, Clark Decl. ¶ 18).

j. **Uniform Resource Locator (URL)**

Level 3 asserts the term "Uniform Resource Locator" and "URL" should be construed as follows: **URL, for example, as commonly used in the world wide web**.

The specification of the Footprint Patents discloses "on the World Wide Web ('the Web') which is a subset of the Internet, the manner in which information address locations are provided has been standardized into Uniform Resource Locators (URLs)." ('935 Patent, col. 5:51-55). It appears that the parties agree as to the meaning of the term "URL."

k. **Repeater Selector Mechanism/Subscriber Verifying Mechanism**

Limelight attempts to narrowly define "repeater selector mechanism" and "subscriber verifying mechanism" by arguing that these terms should be construed under 35 U.S.C §112, ¶6. The terms "repeater selector mechanism" and "subscriber verifying mechanism," however are presumed not to be subject to Section 112, ¶6 because they do not contain the term "means." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369 (Fed. Cir. 2002); *see also Greenberg*



*v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) ("[T]he fact that a particular mechanism . . . is defined in functional terms is not sufficient to convert a claim element containing that term into a 'means for performing a specified function' within the meaning of section 112(6)."). The Federal Circuit has rejected the argument that because the term does not bring to mind a particular structure, Section 112, ¶6 is automatically invoked. *See Greenberg*, 91 F.3d at 1583.

"What is important is whether the term is one that is understood to describe structure, as opposed to a term that is simply a nonce word or a verbal construct that is not recognized as the name of the structure and is simply a substitute for the term 'means for.'" *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1361 (Fed. Cir. 2004) (holding that the term "connector" did not invoke Section 112, ¶6 because it was a reasonably well understood name for a structure); *see also Greenberg*, 91 F.3d at 1583 (holding that the term "detent mechanism" did not invoke Section 112, ¶6 because it has a generally understood meaning in the mechanical arts); *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003) (holding that the term "circuit" connotes sufficient structure to avoid the application of Section 112, ¶6); *Personalized Media Commc'ns, LLC v. International Trade Comm'n*, 161 F.3d 696, 704 (Fed. Cir. 1998) (holding that "digital detector" did not invoke Section 112, ¶6 because it recited sufficient structure). In this case, the terms "repeater selector mechanism" and "subscriber verifying mechanism" define sufficient structure. (Exhibit F, Clark Decl. ¶¶ 19, 20). Indeed, the fact that companies such as Level 3 (and its predecessors), Limelight and other content delivery networks have managed to create systems and develop software that realize the function of a repeater selector mechanism and subscriber verifying mechanism, indicates that the Footprint Patents either supplied sufficient structure or one reasonably skilled in the art was able to

develop the software independently. *See Trading Techs. Int'l, Inc. v. eSpeed, Inc.*, No. 04 C 5312, 2006 WL 3147697, at \*13 (N.D. Ill. Oct. 31, 2006).

**Repeater Selector Mechanism**

Level 3 asserts the term "repeater selector mechanism" should be construed as follows: **a mechanism which is constructed and adapted to identify an appropriate repeater server from a network of one or more repeater servers for a particular client request.**

The claims themselves provide the structure required to avoid Section 112, ¶6 by stating that a repeater selector mechanism is "constructed and adapted to identify . . . an appropriate repeater server . . . ." ('807 Patent, col. 26:29-31; col. 27:31-33, 63-65). Because the claim language itself specifies the exact structure which performs the function of selecting a repeater, Federal Circuit case law consistently holds that Section 112, ¶6 is not invoked. *See e.g., Trimed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259-60 (Fed. Cir. 2008) (citations omitted). ("Sufficient structure exists when the claim language specifies the exact structure that performs the functions in question without need to resort to other portions of the specification or extrinsic evidence for an adequate understanding of the structure."). Further, the specification of the Footprint Patents discloses the properties of an appropriate repeater server to be selected: "[a]n appropriate repeater is one which is not too heavily loaded and which is not too far from the client in terms of some measure of network distance." ('935 Patent, col. 11:22-24). Moreover, the specification provides that "[t]he [repeater selector] mechanism used here relies on specific, compact, pre-computed data to make a fast decision." ('935 Patent, col. 11:24-26). In fact, a "repeater" is defined structurally as an "intermediate processor [] used to service client requests" and include "any processes or collections of processes that deliver resources to client[s] [] on behalf of the origin server 102" and may include a cache (storage device). ('935 Patent, col. 5:26-33). One

skilled in the art would understand the system requirements of a mechanism that is selecting a repeater having a certain structure and properties. (Exhibit F, Clark Decl. ¶ 19). For at least these reasons, construction of “repeater selector mechanism” under Section 112, ¶6 is inappropriate.

**Subscriber Verifying Mechanism**

Level 3 asserts the term "subscriber verifying mechanism" should be construed as follows: **a mechanism, such as a table, used to associate a subscriber with a resource requested by a client.**

The specification of the Footprint Patents discloses a table in the repeater as an exemplary structure of how subscribers are verified: "[t]he repeater uses an internal table to verify that the origin server belongs to a known 'subscriber.'" ('935 Patent, col. 10:36-37). Moreover, the claims themselves provide additional structure required to avoid Section 112, ¶6 by stating that a subscriber verifying mechanism is "constructed and adapted to verify whether an entity is any one of the plurality of subscribers to the repeater server network . . . ." ('807 Patent, col. 26:32-34, col. 27:34-37; col. 28:1-3). One of skill in the art would understand the structure, usually a table, used to verify a subscriber. (Exhibit F, Clark Decl. ¶ 20). For at least these reasons, construction of “subscriber verifying mechanism” under Section 112, ¶6 is inappropriate.

**B. Content Routing**  
**U.S. Patent Nos. 6,473,405 (the "Routing Patent")**

**1. Background**

The Routing Patent describes various methods for determining an optimal path for routing data over a packet-switched communications network. A packet-switched network is a

shared network over which packets from various source nodes<sup>6</sup> to various destination nodes can share the same network path. In our example above, the packets containing the Yahoo home page may be sharing a portion of their network path with packets being transmitted from different source nodes. Such a configuration may result in traffic congestion on the network and, therefore, a reduction in speed in the delivery of information over the network which, for the Yahoo home page example, could slow the delivery of the page. This differs from circuit-switched networks generally used for telephone service, where there is a dedicated circuit, without interruption, between the calling party and the called party.

## **2. The Routing Patent**

The Routing Patent recognized and solved the fundamental obstacles needed to efficiently route data over a packet-switched network. The Routing Patent describes an "underlying network" (*e.g.*, the Internet) having "existing routing mechanism" that select a "default path" through the network to send data from a source to a destination. One specific problem addressed by the Routing Patent is that sometimes the "default" path does not meet the needs of the network operator. This default path may be too slow, too expensive, or too unreliable for a particular network operator.

The Routing Patent solved the problem of inadequate default path performance by providing additional functionality to a special group of nodes, referred to as "intermediate nodes" or "overlay nodes." These overlay nodes create an "overlay network" of "alternate routing mechanisms" overlaid on top of the "existing routing mechanisms" of the underlying network.<sup>7</sup>

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<sup>6</sup> Physically, the nodes can be any of a variety of devices (such as computers, servers, routers and switches) performing various functions, including transmitting, receiving, processing and routing signals.

<sup>7</sup> "An overlay network of alternate routing mechanisms is constructed on top of the existing Internet routing mechanisms to find and exploit available resources." (405 Patent, col. 3:43-45).

By using an overlay network, a service provider could implement the method of the Routing Patent and not be required to modify existing routing mechanisms.

The Routing Patent provides "steps and means for measuring the costs of transmitting the message from the source to the destination along one or more non-default, alternative paths passing through a special group of intermediate [overlay] nodes." ('405 Patent, col. 2:44-47). The alternative path through the "overlay nodes" may be a better path, based upon the network operator's selected criteria, than the "default path" selected by the "existing routing mechanism" of the underlying network. By comparing the "cost" of the default path and the "cost" of the alternative path on the overlay networks, an optimal path can be determined.

### **3. The Claims of the Routing Patent**

Claims 1-3 and 6-8 of the Routing Patent are claims that recite a particular method and software code for implementing a method of efficiently routing data over networks. Independent claims 1 and 4 of the Routing Patent recite the use of real-time traffic information to select between a default path and an alternative path based on a comparison of the cost of routing over those paths. Dependent claims 2 and 5 specifically recite routing traffic along an alternative path whereas claims 3 and 6 disclose the use of an overlay node over which data is routed. We now address the parties' major points of contention (the terms in dispute and Level 3's proposed construction appear in bold below).

### **4. Certain Terms of the Routing Patent Have Already Been Construed**

U.S. Patent No. 6,275,470, which has the same specification and file history and is the parent patent to the '405 Routing Patent, was previously the subject of litigation in *Cable & Wireless Internet Servs., Inc. v. Akamai Techs., Inc.*, No. C 02-03708 (CRB) (N.D. Cal.). On July 10, 2003, Judge Charles R. Breyer entered an order construing, amongst others, the following claims terms: "measuring a cost," "existing routing mechanisms," and "intermediate

nodes." (Exhibit C, Memorandum and Order ("Order") dated July 10, 2003). The terms were defined as follows:

measuring a cost: determining the value of network communication performance metrics, in accordance with a practitioner's priorities and needs, associated with transmitting a message from a source to a destination (Order, pp. 5-6).

existing routing mechanism: the routing mechanisms used by the underlying network (Order, p. 6).

intermediate nodes: network connection points that have additional functionality for exploiting overlay routing, and that cooperate to provide forwarding to paths overlaid over the underlying network (Order, pp. 6-7).

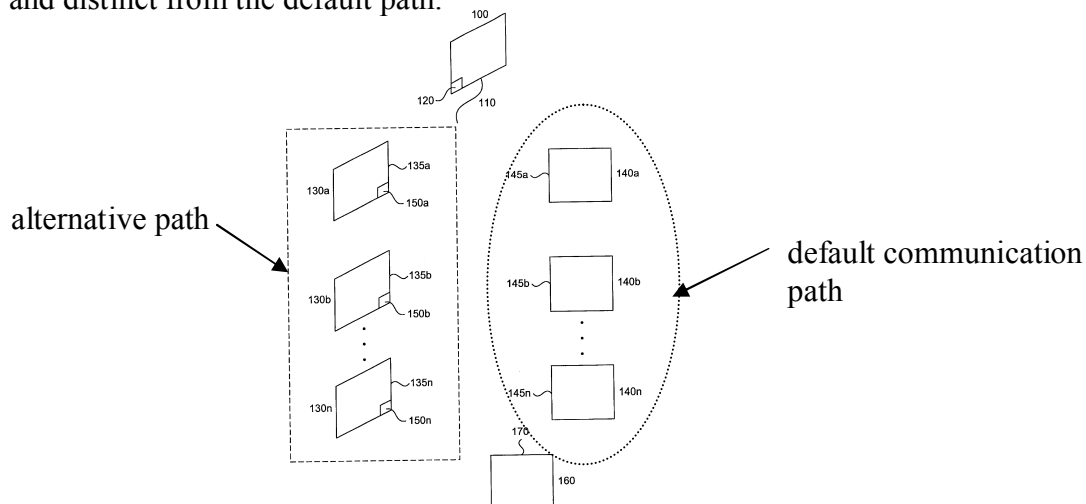
While not binding on this Court, of course, we respectfully suggest that Judge Breyer's prior ruling is useful and instructive regarding construction of the claim terms "cost," "existing routing mechanisms" and "overlay node," which are in dispute in this litigation.

## 5. Construction of the Claims of the Routing Patent

### a. Alternative Path

Level 3 asserts the term "alternative path" should be construed as follows: **a path that is not the default path.**

Figure 1 of the specification of the Routing Patent discloses an alternative path as separate and distinct from the default path:



The specification identifies nodes 140a-n as being in a "default communication path" and that "overlay path modules 150 cooperate to discover alternative paths through overlay nodes 130[a-n]." ('405 Patent, col. 3:54-62; col. 4:39-41).

**b. Cost**

Level 3 asserts the term "cost" should be construed as follows: **the value of network communication performance metrics, in accordance with a practitioner's priorities and needs, associated with transmitting a message from a source to a destination.**

The specification of the Routing Patent specifically confirms Level 3's definition of cost as being associated with transmitting a message from a "source A" to a "destination B":

Module 10 employs a predetermined cost function that combines the monitored metrics and detects end-to-end communications that do not meet specific predetermined requirements. For such communications, the detection process would extract from the monitoring operations . . . ***the cost of the data communication from A to B*** [where source is A and destination is B].

('405 Patent, col. 5:22-29; col. 4:31, 33) (emphasis added).

***Cost function F is preferably drawn from a set of network communication performance metrics*** such as delay, throughput, jitter or loss, ***in accordance with the practitioner's priorities and needs.***

('405 Patent, col. 5:47-50) (emphasis added). Accordingly, Level 3 adopted the definition of the term "cost" in "measuring a cost" given by Judge Breyer in the *Cable & Wireless* case identified above. It appears that the parties agree as to the meaning of the term "cost," based on a letter from Limelight's counsel which Level 3 received shortly before it filed this brief.

**c. Default Path**

Level 3 asserts the term "default path" should be construed as follows: **the path derived by means of existing routing mechanisms.**

Level's definition of the term "default path" is confirmed by the language of the claims 1

and 6 of the Routing Patent as well as claim 1 of U.S. Patent No. 6,275,470 ("the '470 Patent," Exhibit D), the parent of the Routing Patent: "selecting a default path for transmitting data . . . using one or more existing routing mechanisms of a communications network." ('405 Patent, col. 12:50-53; col. 13:12-15); and "the default path being derived by means of one or more existing routing mechanisms of the communications network." ('470 Patent, col. 12:41-44).

The prosecution history of the '470 Patent confirms Level 3's definition of default path:

The default path is derived through the use [of] one or more existing routing mechanisms. A computer-based communications network typically can use different algorithms to route packets from a source to a destination . . . *[T]he default path in the present invention is derived by existing routing mechanisms used by the computer-based communications network.*

(Exhibit E, Preliminary Amendment dated Dec. 12, 2000, p. 5) (emphasis added).

The parties generally agree on the definition of the term default path except that Limelight has added the limitation that the path must be derived as "if there were no overlay network." Such limitation is not found in the intrinsic evidence and is confusing and unnecessary.

#### **d. Destination**

Level 3 asserts the term "destination" should be construed as follows: **a network connection point at which a message is received.**

The specification of the Routing Patent discloses that a message is received at the destination: "software . . . forwards the packets on to their final destination at node 160. In this way, the original message gets from client [] 100 to destination node 160 . . . ." ('405 Patent, col. 8:44-46; col. 9:13-15). By its ordinary meaning "destination" is "[t]he place to which one is going or directed." *The American Heritage College Dictionary*, 3<sup>rd</sup> ed., p. 378 (1997).

The parties generally agree on the definition of the term destination except that Limelight



has added the limitation that the destination must be "identified by the destination field of a data packet." First, by referencing the field in a data packet, Limelight's definition attempts to define a "destination address" rather than "destination." Again, the word in the claim is "destination," not "destination address." Second, the final destination is not always identified by a packet's destination field at intermediate nodes such as when encapsulation is used. (Exhibit F, Clark Decl. ¶ 21). As disclosed in the specification of the Routing Patent, in situations where data is routed over an alternative path of the overlay network, the source node 100 addresses a packet to an overlay node 130, instead of the final destination 160, and encapsulates the address of the final destination 160 in the packet. ('405 Patent, col. 8:30-33). In such a packet, the destination 160 would not be in the destination field. Thus, Limelight construction should be rejected because it defines a term which is not in the claim language itself and also is inconsistent with a preferred embodiment of "destination" disclosed in the specification. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

**e. Dynamic Router**

Level 3 asserts the term "dynamic router" should be construed as follows: **a network connection point from which a message is received capable of transmitting data along a default or alternative path.**

The specification of the Routing Patent discloses that a dynamic router, such as a source router, can transmit a message either over the default path or an alternative path. "In step 200, the pertinent process is initiated when a user who is connected to source 'A'. . . requests communication of a message to destination B." ('405 Patent, col. 4:29-33). As shown in Figure 2, if a cost of transmitting along the default path is below a threshold cost for the requested communication, then source A will transmit data on the default path. ('405 Patent, col. 5:17-20).

If, however, the threshold cost is exceeded by the default path for the requesting communications, the system determines costs of alternative paths over the overlay network. ('405 Patent, Figure 2; col. 4:33-46; col. 5:34-50). : "[T]hese alternative paths are compared to the existing Internet [default] route or previously chosen overlay routes." ('405 Patent, col. 4:46-48). "If a new path is found through the overlay network nodes that has better performance than the default path," source A can "route packets through the new path in a transparent matter . . . ." ('405 Patent, Figure 2; col. 4:50-58). Thus, a dynamic router can route over either a default or alternative path.

**f. Existing Routing Mechanisms**

Level 3 asserts the term "existing routing mechanisms" should be construed as follows:  
**the routing mechanisms used by the underlying network.**

The specification of the Routing Patent discloses that an "existing routing mechanism" is the collection of routing mechanisms that the underlying network uses to route data. It is a relative term, dependent upon the underlying network and what routing mechanisms it may use. These routing mechanisms are distinct from "alternate routing mechanisms" available to the intermediate overlay nodes. Thus, whether a routing mechanism is an "existing routing mechanism" or not depends on whether it is used by the underlying network. The relative nature of the term "existing routing mechanisms" is explicit in the specification of the Routing Patent: "*[a]n overlay network of alternate routing mechanisms* is constructed on top of the *existing* Internet *routing mechanisms* to find and exploit available resources." ('405 Patent, col. 3:43-45) (emphasis added).

Since the underlying network uses "existing routing mechanisms," it logically follows that the underlying network's "default path" (the path selected in the absence of any overlay network) is determined by the "existing routing mechanisms." That is precisely what claims 1

and 6 provide: "selecting a default path . . . by using one or more *existing routing mechanisms* of a communications network." ('405 Patent, col. 12:50-53; 13:12-15). Accordingly, Level 3 has adopted the definition of the term "existing routing mechanisms" given by Judge Breyer in the *Cable & Wireless* case identified above.

**g. Overlay Node**

Level 3 asserts the term "overlay node" should be construed as follows: a **network connection point that has additional functionality for exploiting overlay routing, and that cooperates to provide forwarding to paths overlaid over the underlying network.**

The specification of the Routing Patent discloses an overlay node as a component having additional functionality:

Each *overlay node* 130 preferably includes overlay path module 150 . . . these components are programmed and operable to . . . *provide additional functionality* for exploiting overlay routing . . .

('405 Patent, col. 3:67 – col. 4:6) (emphasis added). Moreover, these overlay nodes provide forwarding paths overlaid over the underlying network: "[t]he overlay network preferably includes a number of computing devices such as *nodes 130a-n* that cooperate to *provide forwarding paths overlaid over an underlying network.*" ('405 Patent, col. 3:62-65) (emphasis added). Accordingly, Level 3 adopted the definition of "intermediate nodes" given by Judge Breyer in the *Cable & Wireless* case identified above which is used interchangeably with "overlay nodes" in the specification of the Routing Patent. ('405 Patent, col. 2:47-49, 55-56).

The parties' main point of contention regarding the term overlay node is Limelight's addition of the limitation that an overlay node must be "measuring the cost of communication to all other overlay nodes." This limitation contradicts the specification which only provides that costs for a set number of nodes – not all nodes as Limelight's definition implies – is

measured/calculated:

[M]odule 110 sends a query to the overlay network nodes 130 to determine if the overlay network is capable of offering a better forwarding path. The query is *preferably sent to a specified number ('q') of the overlay network routers* 130, depending on the configuration.

('405 Patent, col. 5:37-42; *see also* col. 5:51-56) (emphasis added). (Exhibit F, Clark Decl. ¶ 22).

#### **h. Real-Time Traffic Information**

Level 3 asserts the term "real-time traffic information" should be construed as follows:

##### **current traffic information at the time of measurement.**

The specification of the Routing Patent provides two types of traffic information used to determine an alternative path (1) information collected prior to routing, and (2) information collected at the time of routing. For information collected prior to routing and used at the time of routing to determine an alternative path, the specification provides:

[T]he discovery of an overlay forwarding path preferably starts with monitoring one or more cost/performance metrics of interest for the data communications that are carried out on the default Internet routing path . . . . Module 110 employs a predetermined cost function that combines the monitored metrics and detects end-to-end communications that do not meet specific predetermined requirements. For such communications, the detection process would extract from the monitoring operations (1) the source address A, (2) the destination address B and (3) the cost of the data communication from A to B. . . . *This information is then used in the process of on-demand forwarding path discovery . . . .*

('405 Patent, col. 5:17-32). The specification also discloses collecting information at the time of routing and using the information at that time to determine an alternative path. For example, when the cost of routing over the default path exceeds a certain threshold, the specification provides:

Source node 100 . . . can potentially discover end-to-end communications that do not meet specific requirements. In that

event, in order to initiate steps 220-225, module 110 sends a query to the overlay network nodes 130 to determine if the overlay network is capable of offering a better forwarding path. The query is preferably sent to a specified number ('q') of the overlay network routers 130, depending on the configuration. In a relatively simple embodiment, each of the q forwarding path query messages preferably includes: (1) a destination address B, (2) a source address A, and (3) an identifier for a predefined cost function F.

('405 Patent, col. 5:34-46; see also Figure 2; col. 4:33-46; col. 10:44-50; col. 11:21-26). Thus,

Level 3 proposed construction covers both instances of real-time traffic information.

Limelight's proposed construction of "real-time traffic information" includes the limitation "within a few seconds of time . . . ." The only place in the specification discussing "a few seconds" is a preferred embodiment pertaining to a stock trader executing securities trades/orders:

[t]he fast, light-weight, on-demand routing capability made possible in accordance with the present invention *can potentially reduce the time required for suitable re-routing to less than a few seconds.*

This rerouting mechanism has two major advantages for the stock trader: (1) The reaction to finding a new route is reduced from minutes to less than two seconds . . . .

('405 Patent, col. 10:36-39, 53-56). For a stock trader, such a quick discovery of a new route may be crucial but for other applications, such a quick turn around may be unnecessary and costly. (Exhibit F, Clark Decl. ¶ 23). And, even if Limelight is trying to infer that real-time is less than a few seconds, it ignores the language that on-demand routing "can potentially reduce time." This infers that the patent also covers situations when real-time could be significantly more than a few seconds. (Exhibit F, Clark Decl. ¶ 24).

### III. CONCLUSION

For at least the foregoing reasons, Level 3 respectfully requests that the Court adopt Level 3's proposed claim constructions and deny Limelight's proposed claim construction

positions.

LEVEL 3 COMMUNICATIONS, LLC

Date: June 13, 2008

By its attorneys,

/s/

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I hereby certify that on June 13, 2008, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system, which will send notification of such filing to the following:

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